

Remarks

Claims 1, 6, 8, 9, 12, 16, 19, 22, 23, 27, 29 and 31 are amended and claims 34-37 are added by this amendment. Claims 1-37 will be pending upon entry of this amendment.

I. Response to Claim Objections

The specification has been amended at page 16, line 9 to spell out that the end face is an axially facing surface. Thus, the specification now has verbatim recitation of the term "axially facing surface" appearing in claims 14 and 24. Accordingly, the objection is believed to be overcome.

Claims 16, 23 and 29 have been amended to correct the typographical errors noted by the Examiner. These claims are now believed to be unobjectionable.

II. Response to §112 Rejections

Claim 5 is properly supported by the specification. The specification describes a specific embodiment in which the threads are formed on the first holder member (page 20, lines 17-24). The first holder member is part of the surveying pole (see, e.g., claim 9). Accordingly, it is completely accurate to say that the threads are formed on the surveying pole because the first holder member is part of the surveying pole, as originally described and claimed. It is further noted that the specification expressly states that the shoe can be connected at other locations on the surveying pole (p. 20, ll. 25-26). The claim is, as drafted, completely clear. Accordingly, this objection to claim 5 should be withdrawn.

Claim 18 is also fully supported by the specification as written, for essentially the same reasons as claim 5. Claim 18 recites that the shoe and surveying pole are formed for interconnection. The specific embodiment shown and described has the interconnection formed on the holder member of the surveying pole (p. 20, ll. 17-24). However, it is clear that the holder member is part of the surveying pole (claim 9) and that the specification expressly states that the shoe can be connected at

other locations on the surveying pole (p. 20, ll. 25-26). Accordingly, the objection to claim 18 should be withdrawn.

Claims 12 and 22 have been amended to more explicitly state that the ends of the first and second pole sections which are closed are the ends *opposite* the ends which are telescopingly interconnected. Accordingly, these claims are believed to satisfy §112. Of course, it is permissible that the both ends of the second pole section be closed since it is received in the first pole section.

Claims 9 and 19 have been amended to eliminate the statement that the level vial holder is capable of indicating that the pole is in a vertical orientation. Accordingly, amended claims 9 and 19 are believed to satisfy §112.

Claim 27 has been amended to replace references to "first pole section" and "surveying pole" with "object", so that one term is used consistently throughout the claim. Claim 29 has been amended to specify that the object in claim 29 comprises the surveying pole. Accordingly, claims 27-30 are believed to satisfy §112.

III. Response to Rejections of Claims 1-16

(A) Claims 1-16

Claim 1 is directed to a surveying pole which is easily reconfigured to work in terrain having different surface properties. For harder surfaces, a point (142) is provided for accurate and precise location of the pole on the surface. However in softer terrains, the point may sink into the ground which is not acceptable for use. The present invention provides a shoe which can be attached over the point so that a larger surface area is presented to support the point without sinking into the ground.

More particularly, claim 1 requires a surveying pole comprising,

- (a) at least one pole section,
- (b) a point mounted on a lower end of said one pole section for engaging the ground, and

(c) a shoe sized and shaped for covering the point, the shoe being formed for releasable connection of the shoe to the surveying pole over the point to selectively cover the point, the shoe having a blunt bottom wall engageable with the ground where the shoe covers the point, whereby the surveying pole is capable of selective configuration for use in terrain having different surface properties without removal of the point.

Claim 1, as amended, is submitted as unanticipated by and patentable over the references of record, including Hall, U.S. Patent No. 4,339,880 and the combination of Hall and Allen, U.S. Patent No. 4,549,360, in that none of them show or suggesting a surveying pole having the combination of a point for engaging the ground and a shoe which is connected over the point to cover the point, where the shoe has a blunt bottom wall engageable with the ground.

Hall discloses a tripod having a surveyor's pole or stake (14, Fig. 6) mounted on the tripod. ~~The construction and operation of this pole is described at column 4, lines 13-22, a portion of which is excerpted here:~~

The lower end of the tube section 66 includes a pin 84 which is riveted or otherwise secured therein. Pin 84 includes a **sharpened** lower point 86 which can be forced into the ground if desired. If a longer extension of tube 14 is required, tube section 68 can be slidably fitted over pin 84. A slot 88 A pin 92 *similar to pin 84* is mounted within the lower end of the tube section 68. (emphasis added).

Hall is not concerned with adapting the pole for different terrain, but only in increasing the length. For that reason Hall discloses a "sharpened lower point 86", and the alternate pin 92 is "similar to pin 84". Figure 6 reveals that the alternate pin 92 is indeed very sharp at its lower point.

Hall fails to disclose or suggest a shoe formed for releasable connection of the shoe to the surveying pole over the

point to selectively cover the point, the shoe having a blunt bottom wall engageable with the ground where the shoe covers the point, as required by amended claim 1. Accordingly, Hall does not show a surveying pole is capable of selective configuration for use in terrain having different surface properties without removal of the point like the surveying pole of claim 1. Thus, claim 1 is unanticipated by and patentable over Hall and the other references of record. Moreover, there is no suggestion in Hall for providing a shoe having a bottom wall formed for blunt engagement which avoids penetration of the ground.

Allen discloses a mount for a target used in an optical alignment system. The mount includes a bushing (30) and a tubular casing (12) which are connected together to form the target mount. The mount has in each embodiment of Allen only one possible configuration, that is, with the target supported by the bushing mount. For instance, there is no disclosure or suggestion that the target mast 40 can be independently supported by a point or any other structure apart from the target bushing. There are no suggested alternate configurations which result in a point being selectively covered and uncovered. In addition, Allen lacks any disclosure or suggestion of a surveying pole or a point.

There is no suggestion in Hall or Allen for the combination of these two references to produce the invention of claim 1. As mentioned, Hall has a second point (92) because it is desired to make the pole or stake longer in some instances. One sharp point (86) is simply replaced with another sharp point (92). Modification of the pole to cover the point with a shoe having a blunt bottom wall to adapt for different terrain is not mentioned or otherwise taught by Hall. Allen fails to include any suggestion that the bushing mount can be used to cover a point making a surveying pole usable on soft ground. The bushing mount is the one and only support for the alignment target. There is no point or other supporting structure of any kind which is covered by the bushing mount. The only possible teaching for combining a point and a blunt bottomed shoe which covers the

point to adapt the pole for different terrain comes from applicants' disclosure. It is improper to take applicants' teaching and in hindsight of this teach to pick and choose in the prior art for certain features (particularly the arbitrary selection of Allen to show a flat bottom) where there is no suggestion for combination within the other prior art (i.e., Hall). Accordingly, claim 1 is nonobvious and patentable over the combination of Allen and Hall.

Claims 2-16 and 34, depending directly or indirectly from claim 1, are submitted as patentable for the same reasons as claim 1.

Claim 5 further requires that the surveying pole have threads formed thereon remotely from the point and adapted to engage the threads of the shoe for stowing the shoe. The prior art fails to show or suggest this construction. Claims 7 and 8 are similar to claim 5, but more broadly recite that the pole is adapted for stowing the shoe at a location away from the point. Claims 7 and 8 include requirements closely similar to claims 17 and 18 and are submitted as patentable ~~for the reasons given~~ below with respect to claims 17 and 18. Accordingly, claims 5, 7 and 8 are patentable for at least these additional reasons.

Claim 10 requires a lock for locking pole sections in a fixed position of extension where the lock includes a movable clamping jaw supported by the base. The jaw includes a rigid base and an elastomeric pad mounted on the rigid jaw member. At least one of the elastomeric pad and the jaw member is shaped for provide frictional resistance to relative telescoping movement of the pole sections in the locked position **which increases upon application of force tending to induce such relative motion**. In the illustrated embodiment, the shape is provided by the interfitting structures 88, 92 of the elastomeric pad and the rigid jaw member (see, Fig. 7). These structures act to wedge the elastomeric pad more tightly against the pole section when force is applied, increasing the frictional resistance. Bates, U.S. Patent No. 5,566,460, discloses a telescoping pole having a lock, but without an elastomeric pad. Owoc et al., U.S. Patent

No. 6,332,277, discloses a mount for a level which has cylindrical elastomeric members to improve grip. However, these members are not shaped to increase the frictional resistance when a force tending to cause the undesired movement is applied. Accordingly, the combination of Hall, Allen, Bates and Owoc et al. fails to produce the claimed invention, and claim 10 is patentable for this additional reason.

Claim 11 further requires that first and second pole telescopingly interfitting sections are adapted for releasable, snap-together connection. Heater, U.S. Patent No. 3,762,058, shows a telescoping surveyor's rod including multiple sections. However, the sections are fixed together. As stated at column 2, lines 26-28, the outer tube 12 is necked down at its end to prevent the inner tube from escaping. It is not contemplated by Heater that the sections could be snapped apart. The ball bearings 19 merely lock the sections in a fixed position of extension, but do not permit releasable, snap-together connection as required by claim 11. Accordingly, claim 11 is nonobvious and patentable over Hall, Allen and Heater for this additional reason.

Claim 14 requires that the at least one section of the pole having a fitting including an axially facing surface with a peripheral engagement portion and an axially recessed portion. Claim 14 is patentable over Hall and Allen, neither of which show this feature. The published application No. 2002/0003985 (Hansson et al.) is not properly prior art against the present application. The prior art status of Hansson et al. must be established under 35 U.S.C. §102(e). Hansson et al. have a U.S. filing date of May 18, 2001. Applicants' filing date is August 25, 2000. The foreign priority date of Hansson cannot be used to establish its effective prior art date under §102(e)(1). The effective date is the date filed "in the United States" according to 35 U.S.C. §102(e). Accordingly, the rejection of claim 14 must be withdrawn.

Claim 15 pertains to a level vial holder for mounting on the pole section, which is particularly constructed for

alignment of the vial holder on the pole section, and is similar to claim 27 below. Claim 15 is submitted as patentable over the art of record for the same additional reasons as given for claim 27 below.

Claim 16, as amended, includes the same requirements argued hereinafter with regard to claim 31. Accordingly, claim 16 is submitted as patentable for the additional reasons given below for claim 31.

(B) New claim 34

New claim 34 depends from claim 1 and further requires that a lower end of the point of the surveying pole be closely adjacent to the bottom wall of the shoe when the shoe is attached over the point. Support for this amendment is found in Fig. 21. Therefore, the length of the pole does not significantly change when the shoe is in use. In contrast, the entire purpose of the additional pole section of Hall is to increase the length of the pole. Constancy in length of the pole is very important for surveying so that the measurements taken using the pole do not have to be adjusted when the shoe is used. It is noted that the term closely adjacent does not exclude contact of the point with the shoe. The prior art of record fails to show or suggest a shoe having the attributes set forth in claim 1 wherein the distal end of the point is closely adjacent to the bottom wall of the shoe when the shoe is connected over the point so that the length of the pole remains substantially unchanged.

(C) New Claims 35 and 36

New claim 35 is similar to claim 1 but does not specifically recite that the shoe device covers the point in use. However, claim 35 requires the shoe device to have a blunt bottom wall engageable with the surface and having a greater surface area for engagement with the surface than the point, whereby the surveying pole is capable of selective configuration for use in terrain having different surface properties without removal of

the point. The prior art of record fails to show or suggest such a surveying pole as set forth in claim 35.

IV. Response to Rejection of Claims 17-26 and New Claim 37

(A) Claims 17-26

Claim 17 is directed to a feature of the present invention by which a shoe used in place of the point can be stowed directly on the surveying pole. This has substantial advantage in the field where accessories must be carried often over long distances on foot to the location where surveying is to be done. Loose parts require more space in existing containers carried by the surveyors or another container. Providing increased functionality through the provision of a shoe for reconfiguring the pole for different terrain is significantly offset in value by providing another part to be carried. More specifically, claim 17 specifies a surveying pole comprising:

- (a) at least one pole section,
- (b) a point adapted for mounting on a lower end of said one pole section for engaging the ground, and
- (c) a shoe formed for releasable connection to the surveying pole at the lower end to selectively configure the surveying pole for use in terrain having different surface properties,
- (d) the surveying pole being adapted for stowing the shoe at a location away from the lower end of said one pole section when the shoe is not needed.

Claim 17 is nonobvious and patentable over Hall, Allen and Woods, U.S. Patent No. 5,442,866, in that none of them show or suggest a surveying pole including a shoe capable of releasable connection to the pole where the pole itself is capable of stowing the shoe when not in use.

Woods shows a bracket attached to a pole for holding a tape measure. The teaching of Woods is to mount **one** part (a tape measure) at **one** location (the bracket) on the surveying pole. Clearly, the tape measure cannot be connected to the surveying pole at any other location. In that regard, Woods provides a

teaching which is identical to Hall and Allen. Both Hall and Allen show attaching a single part at a single location. Woods shows the same thing. Accordingly, the combination of the three references still lacks disclosure of a surveying pole which connects a shoe at two locations on the pole. Hall, Allen and Woods provide no suggestion or teaching for making a part of the pole supporting structure stowable in any fashion. Absent this suggestion, it is improper to combine Woods with Hall and Allen to reject claim 17. Accordingly, claim 17 is allowable over the art of record.

Claims 18-26, depending directly or indirectly from claim 17, are submitted as patentable for the same reasons as claim 17.

Claim 18 further requires that the **shoe and pole** be formed for releasable connection at the location away from the point. In the illustrated embodiment, both have threads (although other mating configurations could be employed). Hall, Allen and Woods fail to show or suggest a shoe which is formed for releasable connection at the stowed location. The tape measure of Woods is not formed to facilitate its mounting on the bracket. It is only the bracket which is so formed. An illustrated embodiment of the claimed invention provides threads on both the surveying pole and the shoe for remote connection of the shoe on the pole. Accordingly, claim 18 is patentable for this additional reason.

Claims 20 and 21 include requirements substantially the same as set forth in claims 10 and 11 (respectively). Accordingly, claims 20 and 21 are patentable for the same additional reasons as claims 10 and 11.

Claims 24-26 include requirements substantially the same as set forth in claims 14-16 (respectively). Accordingly, claims 24-26 are patentable for the same additional reasons as claims 14-16.

(B) New Claim 37

New claim 37 is similar to claim 17. More particularly, claim 37 is directed to a surveying pole for use in locating a position in a survey of land, the surveying pole comprising:

- (a) at least one pole section,
- (b) a point mounted on a lower end of said one pole section for precise location of the surveying pole on a surface, and
- (c) a shoe device formed for selective connection to the surveying pole so that the shoe device engages the surface instead of the point in a use position of the surveying pole, the shoe device including a wall engageable with the surface having greater surface area for engaging the surface than the point, whereby the surveying pole is capable of selective configuration for use in terrain having different surface properties,
- (d) the surveying pole being adapted for stowing the shoe device at a location away from the lower end of said one pole section when the shoe device is not needed.

Claim 37 is believed to be patentable for the same reasons as given above for claim 17.

V. Response to Rejection of Claims 27-30

Claim 27 is directed to a level vial holder adapted for mounting on an object (e.g., a surveying pole) to support a level vial which is used to establish a vertical orientation of the pole in use. The claimed level vial is particularly adapted for precise location on the object to give the most accurate reading of the level vial. In combination with that feature, the level vial holder provides gripping action so that the level vial holder will not slide with respect to the object, requiring only a minimal application of normal force to the object to produce the gripping force. More particularly, claim 27 specifies a level vial holder adapted for mounting on an object to be oriented, wherein the level vial holder comprises:

(a) first and second holder members engageable with the object on generally opposite sides thereof, and adapted to be interconnected for clamping engagement with the object, *the first and second holder members having respective engagement surfaces shaped at least partially in conformance with the shape of an exterior surface of the object,*

(b) the first holder member including the engagement surface being formed of a rigid material for positively locating the level vial holder relative to the object,
the second holder member having an elastomeric pad on its engagement surface for enhancing frictional resistance to movement of the level vial holder axially of the object.

Claim 27, as amended, is nonobvious and patentable over the art of record, including Hall, Allen and Owoc et al. in that none of them show or suggest a level vial holder having first and second holder members with engagement surfaces shaped at least partially in conformance with an exterior surface of the object, wherein the engagement surface of the first member is formed of a rigid material for positively locating the level vial holder relative to the object and the second member has an elastomeric

pad on its engagement surface to enhance frictional resistance to movement relative to the object.

Owoc et al. shows a bracket having spring biased arms that mounts a level to another object. It is apparent this is intended to be a very temporary mounting which does not require the bracket to hold the level in a constant and precise orientation as the object is jostled as it is carried over uneven terrain, or as it rides around in a truck, as is the case with surveying poles. Accordingly, Owoc et al. lacks a teaching of the claimed structure. The arms include cylindrical elastomeric pads to increase gripping of the object. Owoc et al. lacks any disclosure or suggestion as to the combination of rigid surfaces and elastomeric pads to simultaneously produce highly accurate mounting and good resistance to relative sliding motion of the bracket. Because the bracket is in no way shaped in conformance to the shape of the object on which it is mounted, very substantial gripping forces which would be unsuitable for thin walled or fiberglass surveying poles, as the force could cause damage to the poles.

The Examiner mischaracterizes the claimed invention as simply the provision of an elastomer to increase the frictional grip on the pole. In fact, claim 27 is directed to the provision of an elastomer for increased grip *without loss of positive positioning of the level vial holder on the pole section*. This is accomplished by providing first and second holder members having respective engagement surfaces *at least partially in conformance with the shape of the exterior surface of the object*. In addition, the engagement surface of the first holder member is formed of a rigid material *which engages the pole section when the holder is mounted thereon for positive location of the holder*, while the second engagement surface is provided with an *elastomeric pad to engage the pole section and increase grip*. Thus, both gripping and positive location are provided. The prior art of record fails to show or suggest such a design. Owoc et al. suggests the use of elastomeric material, but fails to suggest the combination of elastomeric material and rigid

material on surfaces shaped in conformance with the object on which the holder is mounted, as required by claim 27, to simultaneously achieve gripping and positive location. Accordingly, claim 27 is nonobvious and patentable over Hall, Allen, Owoc et al. and the other references of record.

Claims 28-30, depending directly or indirectly from claim 27, are submitted as patentable for the same reasons as claim 27.

VI. Response to Rejection of Claims 31-33

Claim 31 is directed to a surveying pole with a replaceable tip and a spare which can be held in the surveying pole until needed. It is not uncommon for the tip of a surveying pole to be broken in use. The tip must then be removed and replaced. The biggest problem is that of carrying the spare tips around until they are needed. As stated previously, surveying is frequently done in remote areas which can be accessed only on foot, requiring the surveyors to carry their equipment. The more separate items which must be carried, ~~the more different~~ containers must be provided to take on the journey to the remote area. It is possible the surveyor may even forget to include such a small part when preparing to leave to the remote area. More particularly, claim 31 specifies a surveying pole comprising:

- (a) at least one pole section,
- (b) a point adapted for releasable mounting on a lower end of the pole section for use in locating the surveying pole on the ground,
- (c) the point comprising a body, a tip formed for releasable interconnection with the body at a connection location on the body, and a spare tip formed for releasable interconnection with the body at the connection location on the body to replace the tip, the body having a cavity therein sized and shaped to hold the spare tip when not in use.

Claim 31, as amended, is submitted as patentable over the cited references including Hall and the combination of Hall and Allen in that none of them show or suggest a surveying pole having point including a tip and a spare tip held in the body which spare tip is connected in the same connection location as the tip to replace the tip when needed.

Hall is concerned with lengthening the pole for some applications, **not** with replacing a broken tip. Accordingly, the structure is very different from the claimed invention. Hall shows a pole having an additional tube section (68) having its own pin (92). Hall also has another pin (84) which is received in an connected to a different section (66) of the pole. The tube section (68) and pin (92) are connected to the pole by a set screw 90 mounted on the pin (84). Thus, there are two completely different connection locations, which is to be expected because neither pin is a replacement for the other when broken, but is used when a longer (or shorter) pole is desired. The problem of how to carry the extra pole section (68) and pin (92) is completely unresolved by Hall and Hall provides absolutely no suggestion as to how to solve this problem. Mounting the pin (92) to what the examiner characterizes as the spare tip (84) requires that spare tip remain connected to the pole when not in use. This results in a longer and bulkier construction. Moreover, it is inaccurate to say Hall even addresses the issue of a spare tip, as Hall is directed solely to lengthening the pole.

Allen is not pertinent to the issue of the tip and spare tip and their connection.

Accordingly claim 31, as amended, is patentable over Hall and the combination of Hall and Allen. There is no disclosure or suggestion of a point having a tip and a spare tip wherein the spare tip is connected at the same mounting location as the tip to replace the tip.

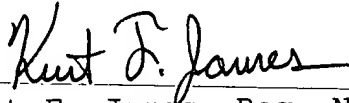
Claims 32 and 33, depending directly or indirectly from claim 31, are submitted as patentable for the same reasons as claim 31. In addition, claim 31 requires a shoe configured to

distribute the weight of the surveying pole and which can cover the point. As discussed above with respect to claim 1, Hall shows two sharpened pins (86, 92), which clearly do not distribute the weight of the surveying pole. Accordingly, claim 32 is submitted as patentable for this additional reason. Claim 33 requires a connector element at a location remote from the point for connecting the shoe to stow it when not in use. Claim 33 is submitted as patentable for the same reasons as given for claim 27.

VII. Conclusion

In view of the foregoing, reconsideration and allowance of claims 1-33 is respectfully requested. In addition favorable consideration and allowance of new claims 34-37 is also requested.

Respectfully submitted,



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